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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/828,534

04/08/2004

Thomas Gennett

S-103,695

3887

31970 7590 03/22/2007  
UNITED STATES DEPARTMENT OF ENERGY  
1000 INDEPENDENCE AVENUE, S.W.  
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WASHINGTON, DC 20585-0162

EXAMINER

LE, HOA T

ART UNIT

PAPER NUMBER

1773

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<div style="border: 1px solid black; width: 150px; height: 20px; margin: 0 auto;"></div> <p style="text-align: center;"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/828,534	<b>Applicant(s)</b> GENNETT ET AL.	
	<b>Examiner</b> H. T. Le	<b>Art Unit</b> 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 08 April 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite. The preamble “carbon nanotube polymer composite actuator” suggests a carbon nanotube-polymer composite being a component of the claimed actuator. However, the claim fails to describe the location of the carbon nanotube polymer composite in the actuator.

Claim 3 is confusing. Is the claim intended to recite weight percent of single wall carbon nanotubes in the nanotube-polymer composite or their weight percent in the polymer?

In claim 19, “electro-*chemical* response” has no proper antecedent basis. Note that only “electro*mechanical*” response is recited in claim 1 (upon which claim 5 depends).

Other claims are deemed indefinite in view of their dependency upon claim 1.

***Response to Amendment***

4. The affidavit under 37 CFR 1.132 filed December 19, 2006 is sufficient to overcome the rejection of claims 1-22 based on a combination of the Baughman patent and the Landi article as applied in the last office action. However, upon careful review of the Baughman patent, the claims are not allowable in view of the rejection as follows.

***Claim Rejections - 35 USC § 102***

5. Claims 1-4, 6-13 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by the Baughman patent (US 6,555,945).

Claim 1: The Baughman patent teaches an actuator comprising an electrolyte, at least two electro-conducting electrodes separated by the electrolyte, and at least one electrode undergoing a response that provides the actuator output upon charge injection responsive to application of an electrical voltage between said two electro-conducting electrodes. See Baughman, claim 1. The electrode provides an electromechanical response. See col. 7, lines 24-27. Note that the claim is not limited to a carbon nanotube-polymer composite because the composite is only recited in the preamble. Thus, carbon nanotube-polymer composite is not a positive limitation.

Claim 2: Carbon nanotube-polymer composite for the electrode is taught at col. 15, lines 35-60.

Claims 4, 6, and 11-13: See paragraph bridging columns 28 and 29. In the alternative, these claims are product-by-process claims; and it appears from Baughman teaching that how the

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carbon nanotube-polymer composite is formed does not affect the resulting electrode of the actuator.

Claim 7: see claims 12-14.

Claim 8: See col. 15, lines 35-60.

Claim 9: See col. 28, lines 58-65 where solid-state electrolyte is taught to penetrate the carbon nanotube to form a composite. See col. 33, lines 8-9 and 49-52 where solid-state electrolyte is suggested to be perfluorosulfone polymer.

Claim 15: See Baughman, paragraph bridging columns 17 and 18.

Claim 16: see col. 11, line 48 to col. 12, line 9 and claims 12-14.

Claim 17: See paragraph bridging columns 28 and 29. In the alternative, these claims are product-by-process claims; and it appears from Baughman teaching that how the carbon nanotube-polymer composite is formed does not affect the resulting electrode of the actuator.

Claims 18-19: col. 4, lines 8-17 and col. 5, lines 47-59.

Claims 20-22: See Baughman, col. 7, lines 5-45 and claims 74-77.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over by the Baughman patent (US 6,555,945) as applied to claims 1-4, 6-13 and 15-22 above, and further in view of the discussion below.

It would have been obvious through routine experimentation to arrive at the amount of single wall carbon nanotubes in the composite as claimed, especially when Applicant has not disclosed whether the specific proportion as claimed is for any particular purpose or to solve any particular problem.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 10:00 a.m. to 6:30 p.m., Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



H. T. Le  
Primary Examiner  
Art Unit 1773

March 17, 2007